JAPANESE [JP,10-164204,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS DESCRIPTION OF DRAWINGS DRAWINGS

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

CLAIMS

[Claim(s)]
[Claim 1] In the hand free adapter equipment which enables a hand free message, without equipping with a portable telephone and having a portable telephone The telephone number read-out means which reads a phase hand's telephone number beforehand registered into said portable telephone one by one, A telephone number storage means to memorize a phase hand's read telephone number one by one, When there is arrival or dispatch while having memorized a phase hand's read telephone number one by one for this telephone number storage means Hand free adapter equipment characterized by enabling said hand free message after having a read-out interruption means to interrupt read-out of the telephone number from said portable telephone and interrupting read-out of the telephone number from said portable telephone.
[Claim 2] The hand-free adapter equipment according to claim 1 carry out that read-out of the telephone number from said portable telephone is interrupted by the aforementioned read-out interruption means as the description when it has a signal input means input a terminating signal from said portable telephone, and an actuation input means input the actuation for starting a message and a terminating signal is inputted through this signal input means, or when the actuation for starting a message through this actuation input means is inputted.
[Claim 3] Hand free adapter equipment according to claim 1 characterized by interrupting read-out of the telephone number from said portable telephone with the aforementioned read-out interruption means when it has a signal input means to input a dispatch signal from said portable telephone and a dispatch signal is inputted through this signal input means.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] Especially this invention relates to the hand free adapter equipment which can perform a hand free message, without equipping with a portable telephone and having a portable telephone about hand free adapter equipment.
[0002]
[Description of the Prior Art] In recent years, the portable telephone which can be carried is spreading remarkably with progress of the technique of the miniaturization of a circuit or low-power-izing. Moreover, in order to use a portable telephone in in the car, he is trying to offer the safe environment at the time of car transit by equipping hand free adapter equipment with a portable telephone. When a portable telephone has a call, conventional hand free adapter equipment has the advantage that safe arrival-of-the-mail actuation can be performed, even if it can receive a message by operating the receiver switch connected to hand free adapter equipment, and it can talk over the telephone further using the microphone and loudspeaker which are connected to hand free adapter equipment, consequently a car is running.
[0003] Moreover, conventional hand-free adapter equipment reads the telephone number beforehand registered into the portable telephone one by one to hand-free adapter equipment, and make the internal memory in equipment memorize it, and after it chooses the one telephone number of the phase hand who operates the manual operation button prepared in hand-free adapter equipment, and corresponds out of two or more telephone numbers at the time of dispatch, it pushes a message carbon button, sends it to the telephone number concerned, and he was trying to talk over the telephone. Furthermore, since transmission speed was restricted to 600bps when reading the telephone number registered beforehand from a portable telephone one by one and making the internal memory in hand free adapter equipment memorize, if it was in conventional hand free adapter equipment, generally the time amount for about 30 seconds was needed, and great read-out time amount was needed, so that the registration number of cases by the side of a portable telephone was still larger.
[0004]
[Problem(s) to be Solved by the Invention] However, if it was in conventional hand free adapter equipment, since dispatch or arrival of a telephone was unreceivable in the middle of read-out actuation, it could not but wait for termination of this read-out actuation, and dispatch or arrival of a telephone had to be performed. For this reason, there was a problem that the arrival of the mail and submission operation from a phase hand telephone became impossible about 30 seconds at least. This invention was made in view of the above, and even as it reads and memorizes a phase hand's telephone number beforehand registered into the portable telephone as the purpose, it is to offer the hand free adapter equipment which can enable a hand free message.
[0005]
[Means for Solving the Problem] In the hand free adapter equipment which enables a hand free message, without equipping with a portable telephone and having a portable telephone in order that invention according to claim 1 may solve the above-mentioned technical problem The

telephone number read-out means which reads a phase hand's telephone number beforehand registered into said portable telephone one by one, A telephone number storage means to memorize a phase hand's read telephone number one by one, When there is arrival or dispatch while having memorized a phase hand's read telephone number one by one for this telephone number storage means Let it be a summary to enable said hand free message after having a read-out interruption means to interrupt read-out of the telephone number from said portable telephone and interrupting read-out of the telephone number from said portable telephone.
[0006] A signal input means to input a terminating signal from said portable telephone in order that invention according to claim 2 may solve the above-mentioned technical problem, When it has an actuation input means to input the actuation for starting a message and a terminating signal is inputted through this signal input means, Or when the actuation for starting a message through this actuation input means is inputted, let it be a summary to interrupt read-out of the telephone number from said portable telephone with the aforementioned read-out interruption means.
[0007] Invention according to claim 3 makes it a summary to interrupt read-out of the telephone number from said portable telephone with the aforementioned read-out interruption means, when it has a signal input means to input a dispatch signal from said portable telephone and a dispatch signal is inputted through this signal input means, in order to solve the above-mentioned technical problem.
[0008]
[Effect of the Invention] According to this invention according to claim 1, a phase hand's telephone number beforehand registered into the portable telephone is read one by one, and a phase hand's read telephone number is memorized one by one. Here, since read-out of the telephone number from a portable telephone is interrupted when there is arrival or dispatch while having memorized a phase hand's read telephone number one by one, after interrupting read-out of the telephone number from a portable telephone, a hand free message can be enabled.
[0009] Moreover, since he is trying to interrupt read-out of the telephone number from a portable telephone according to this invention according to claim 2 when a terminating signal is inputted from a portable telephone, or when the actuation for starting a message is inputted, a hand free message can be enabled.
[0010] Furthermore, since he is trying to interrupt read-out of the telephone number from a portable telephone according to this invention according to claim 3 when a dispatch signal is inputted from a portable telephone, a hand free message can be enabled.
[0011] Consequently, even if it does not wait for termination of read-out actuation, dispatch or arrival of a telephone can be performed, and it can prevent that the arrival of the mail and submission operation from a phase hand telephone become impossible over the time amount for 30 seconds or more like before. For this reason, since it can respond also to the message in emergency, it can contribute to improvement in the usability ability of hand free adapter equipment.
[0012]
[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing. Drawing 1 is drawing showing the whole hand free adapter equipment configuration concerning the gestalt of 1 operation of this invention. In addition, hand free adapter equipment 1 shall be attached in the center console section of a car. As shown in the whole block diagram shown in drawing 1 (a), the portable telephone 3 is connected to hand free adapter equipment 1 through the signal cable 7. Moreover, as shown in the longitudinal direction sectional view of the equipment shown in drawing 1 (b), a portable telephone 3 is attached and pressed down to the crevice established in hand free adapter equipment 1 top face, and it is fixed to it free [attachment and detachment] with Plates 5a-5d. Furthermore, when it does in this way and a portable telephone 3 is fixed, the hook SW9 prepared in the center of a crevice is pushed, and it is detected that it is in a condition on hook.
[0013] Moreover, he connects with the accessory location (ACC) of an ignition key through the power cord 13, and is trying for hand free adapter equipment 1 to supply a power source to the printed circuit board in which it prepared for the interior and electronic parts were carried from a

power cord 13. Moreover, the signal cable 7, the actuation SW section 11, the loudspeaker 15, and the microphone 17 grade are connected to the internal printed circuit board. A loudspeaker 15 shall share the front loudspeaker for audios attached in the door. Moreover, the microphone 17 shall be attached in the front right pillar section. Furthermore, you may make it attach the actuation SW section 11 in a steering wheel free [rotation].

[0014] Next, drawing 2 is drawing showing the block configuration of the hand free adapter equipment concerning the gestalt of 1 operation of this invention. In this drawing, hand free adapter equipment 1 and a portable telephone 3 are connected through the signal cable 7 which connotes two or more signal lines. A control section 21 has CPU, ROM, RAM, etc. inside, and controls the whole equipment according to a control program or control data. In addition, a control section 21 suspends control of the whole equipment, when a portable telephone 3 is in in its hands [of an operator] when an off-hook condition has hook SW9 namely. Moreover, a portable telephone 3 offers the function as a portable telephone according to actuation of only a manual operation button at this time. Moreover, a control section 21 inputs the actuation information outputted from the actuation SW section 11 shown in drawing 1 (a).

[0015] The serial I/F section 23 exchanges various signals between a control section 21 and a portable telephone 3. In addition, the transmission speed in serial communication is restricted to 600bps. A reset circuit 25 generates a reset signal using the transient phenomenon at the time of power-source ON, and resets a control section 21. An oscillator circuit 27 oscillates a stable clock signal, and supplies it to a control section 21. The speech synthesis section 29 has the voice ROM which records the voice data corresponding to two or more alphabetic characters inside, reads voice data from Voice ROM according to the voice data number given from a control section 21, performs D/A conversion, compounds a speech synthesis signal, and outputs a speech synthesis signal from a loudspeaker 15 via amplifier 35 and Volume VR. An oscillator circuit 31 oscillates a stable clock signal, and supplies it to the speech synthesis section 29.

[0016] The echo cancellation section 33 is for decreasing the echo signal generated when it is reflected by each part in the car and a telephone partner's voice outputted from a loudspeaker 15 becomes a sound signal with a microphone 17 again, and is performing echo cancellation processing of common knowledge which negates a receiving signal component out of a sending signal. After amplifier 35 switches the input signal outputted from a portable telephone 3 through the echo cancellation section 33, or the speech synthesis signal outputted from the speech synthesis section 29 according to the change-over signal outputted from a control section 21, it amplifies one of signals on predetermined voice level, adjusts an output level in Volume VR, and outputs it from a loudspeaker 15. Amplifier 37 amplifies the sound signal inputted through a microphone 17 on predetermined voice level, and outputs it to a portable telephone 3 as a sending signal through the echo cancellation section 33. When it connects with the accessory location of an ignition key through the power cord 13, an operator boards as mentioned above and an ignition key is set up after an accessory location, a power circuit 39 stabilizes the power source supplied from a dc-battery, drops a predetermined electrical potential difference, and is supplied to each part in equipment.

[0017] Next, actuation of the hand free adapter equipment 1 applied to the gestalt of 1 operation of this invention with reference to the flow chart shown in drawing 3 is explained. In addition, this flow chart is memorized inside [ROM] a control section 21, and is processed one by one by the control section 21. As an operator gets into [a car] and it is now shown in drawing 1 (b), a portable telephone 3 shall be attached and fixed to the crevice of hand free adapter equipment 1. Next, suppose that the portable telephone 3 was connected to the signal cable 7. By pushing hook SW9, since it is in a condition on hook, a portable telephone 3 is controllable by this condition also from a control section 21.

[0018] Next, suppose that the operator set up the ignition key after the accessory location. In this case, supply of a power source is started from a power circuit 39 by each part in equipment, only a short period of time is given to a control section 21, and, as for a control section 21, a reset circuit 25 to a reset signal starts actuation. First, at step S10, since the control section 21 read the condition of hook SW9 and detected that it was in a condition on hook, it resets a portable telephone 3. That is, a control section 21 gives a reset code to the serial I/F section

23, outputs a reset code on the actuation signal 1 and 2 from the serial I/F section 23, and resets a portable telephone 3.
[0019] Next, a control section 21 goes up between portable telephones 3 through the serial I/F section 23, and it gets down, a serial signal is exchanged and it judges whether they are a serial signal and the model to which current and the portable telephone 3 connected suit hand free adapter equipment 1. In addition, since decision of being the model to which a portable telephone 3 suits hand free adapter equipment 1 is a well-known control procedure, the explanation is omitted. Moreover, in the gestalt of this operation, it shall be the model to which a portable telephone 3 suits hand free adapter equipment 1. Next, a control section 21 sets up m= 0 as initial value of the algebra m for the loop-formation processing used for memory read-out processing. In addition, Algebra m is the natural number processed so that it may increase corresponding to an abbreviated number.
[0020] Next, at step S20, it judges whether submission operation is performed by current and the operator. That is, when the message carbon button showing initiation of the message which it had on the portable telephone 3 is operated directly, since it gets down, a dispatch signal is added to a serial signal and it is inputted into the serial I/F section 23, a control section 21 can judge [to which it is outputted from a portable telephone 3] whether the dispatch signal was outputted from the portable telephone 3. When submission operation is performed, while progressing to step S60, when there is no submission operation **********, it progresses to step S30.
[0021] Next, at step S30, a control section 21 judges whether the terminating signal was outputted from the portable telephone 3. That is, since it gets down, a terminating signal is added to a serial signal and it is inputted into the serial I/F section 23, a control section 21 can judge [to which it is outputted from a portable telephone 3] whether the terminating signal was outputted from the portable telephone 3. When a terminating signal is outputted, while progressing to step S60, when the terminating signal is not outputted, it progresses to step S40.
[0022] Next, at step S40, the one telephone number of the phase hand corresponding to the abbreviated number beforehand registered into the portable telephone 3 is read as memory read-out processing, and an abbreviated number is added and memorized inside [RAM] a control section 21. In detail, a control section 21 sets abbreviated number code ='00' as the serial I/F section 23 as an abbreviated number code corresponding to the abbreviated number of No. 0. From the serial I/F section 23, abbreviated number code'00' is added to an uphill serial signal, and it outputs to a portable telephone 3.
[0023] The portable telephone 3 which received this reads the telephone number of the phase hand corresponding to this abbreviated number code from an internal memory, next gets down, adds this telephone number to a serial signal, and outputs it to the serial I/F section 23. Next, a control section 21 memorizes the telephone number inputted into the serial I/F section 23 to Interior RAM. Here, a control section 21 updates the algebra m for loop-formation processing with m=m +1, and sets it up.
[0024] Next, at step S50, a control section 21 judges whether the memory read-out processing from a portable telephone 3 was completed. That is, it judges whether the algebra m for loop-formation processing became m=N +1 to the number of registration N. In addition, a control section 21 shall read this number of registration N from a portable telephone 3 beforehand. Here, when the memory read-out processing from a portable telephone 3 is completed, it progresses to step S60. On the other hand, when the memory read-out processing from a portable telephone 3 is not completed, it progresses to step S20.
[0025] Next, at step S60, the message and the so-called usual hand free message using hand free adapter equipment 1 are performed. As a hand free message, since there are a message in the time of arrival of the mail and a message in the time of dispatch, it explains below. The message procedure in the time of dispatch is explained [1st] as processing after branching from step S20. First, since the dispatch signal was outputted from the portable telephone 3, a control section 21 interrupts memory read-out processing. Next, a change-over signal is outputted to amplifier 35, and the signal from the echo cancellation section 33 is made to output to a loudspeaker 15. In this way, an echo sound decreases in the echo cancellation section 33,

and the input signal outputted from a portable telephone 3 is outputted from a loudspeaker 15 via amplifier 35 and Volume VR. Since a phase hand's telephone number is specified from the manual operation button on a portable telephone 3 and submission operation has already been performed by the operator, the call sound outputted from a communication network is outputted to a loudspeaker 15. Here, when a phase hand's operator calls, you have noticed the sound and it appears in a telephone, the response which a phase hand's operator utters is outputted from a loudspeaker 15.

[0026] When a message is completed, after the termination carbon button showing ONFUKKU on a portable telephone 3 is pushed, a communication network is opened wide and it progresses to step S70. In addition, since a terminate signal is added to the going-down serial signal outputted from a portable telephone 3 in this case and it is inputted into the serial I/F section 23, a control section 21 outputs a change-over signal to amplifier 35, and the signal from the speech synthesis section 29 is outputted from a loudspeaker 15. Moreover, since the control section 21 has not given the voice number to the speech synthesis section 29, the signal from the speech synthesis section 29 is a non-signal state, and, needless to say, is in the condition that nothing is outputted, from a loudspeaker 15.

[0027] In addition, since memory read-out processing was interrupted for above-mentioned explanation of operation on the way, the case where the manual operation button on a portable telephone 3 was used was explained, but since the telephone number registered into the portable telephone 3 is memorized in the interior RAM in a control section 21 when the memory read-out processing from a portable telephone 3 is completed, submission operation can be performed as a well-known hand free function using the actuation SW section 11.

[0028] Next, the message procedure in the time of arrival of the mail is explained [2nd] as processing after branching from step S30. First, since the terminating signal was outputted from the portable telephone 3, a control section 21 interrupts memory read-out processing. Next, the call sound which outputs a change-over signal to amplifier 35, and is outputted through the echo cancellation section 33 from a portable telephone 3 is made to output to a loudspeaker 15. Next, the message carbon button on a portable telephone 3 is pushed, an echo sound decreases in the echo cancellation section 33, and the input signal outputted from a portable telephone 3 is outputted by the operator from a loudspeaker 15 via amplifier 35 and Volume VR.

[0029] When a message is completed, after the termination carbon button showing ONFUKKU on a portable telephone 3 is pushed, a communication network is opened wide and it progresses to step S70. In addition, although the explanation of operation at the time of the arrival in the above-mentioned step S60 explained the actuation at the time of using the message carbon button on a portable telephone 3, arrival-of-the-mail actuation can be performed using the actuation SW section 11 also in the middle of the memory read-out processing from a portable telephone 3. In detail, a control section 21 will interrupt memory read-out processing, if a terminating signal is outputted through the serial I/F section 23 from a portable telephone 3. Next, the call sound which outputs a change-over signal to amplifier 35, and is outputted through the echo cancellation section 33 from a portable telephone 3 is made to output to a loudspeaker 15. When answering, the tele key of the actuation SW section 11 is pressed, an echo sound decreases in the echo cancellation section 33, the sound signal outputted from a portable telephone 3 is outputted by the operator from a loudspeaker 15 via amplifier 35 and Volume VR, and a message is started. Moreover, when a hand free message is completed, the tele key of the actuation SW section 11 is again pressed by the operator, and the control section 21 which detected this outputs a terminate signal to a portable telephone 3 through the serial I/F section 23 by him.

[0030] Next, at step S60, a control section 21 judges whether the memory read-out processing from a portable telephone 3 was completed. That is, it judges whether the algebra m for loop-formation processing became m=N +1 to the number of registration N. Here, when the memory read-out processing from a portable telephone 3 is completed, it progresses to step S60. On the other hand, when the memory read-out processing from a portable telephone 3 is not completed, it progresses to step S20. Above, explanation of the flow chart shown in drawing 3 is ended.

[0031] Thus, a phase hand's telephone number beforehand registered into the portable telephone

3 is read through the serial I/F section 23 one by one, and a phase hand's read telephone number is memorized to Interior RAM one by one. Here, since read-out of the telephone number from a portable telephone 3 is interrupted by the control section 21 when a portable telephone 3 has arrival or dispatch while having memorized a phase hand's read telephone number to Interior RAM one by one, after interrupting read-out of the telephone number from a portable telephone 3, a hand free message can be enabled.

[0032] Moreover, since he is trying to interrupt read-out of the telephone number from a portable telephone 3 by the control section 21 when a terminating signal is inputted through the serial I/F section 23 from a portable telephone 3, or when the actuation for starting a message from the actuation SW section 11 is inputted, a hand free message can be enabled. Furthermore, since he is trying to interrupt read-out of the telephone number from a portable telephone 3 by the control section 21 when a dispatch signal is inputted through the serial I/F section 23 from a portable telephone 3, a hand free message can be enabled.

[0033] Consequently, even if it does not wait for termination of the memory read-out processing from a portable telephone 3, dispatch or arrival of a telephone can be performed, and it can prevent that the arrival of the mail and submission operation from a phase hand telephone become impossible over the time amount for 30 seconds or more like before. For this reason, since it can respond also to the message in emergency, it can contribute to improvement in the usability ability of hand free adapter equipment. Moreover, a message can be continued, without having a portable telephone 3 in its hands, even if it starts a car after submission operation or reception actuation since a hand free message can be enabled by the submission operation and reception actuation using a portable telephone 3.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention] Especially this invention relates to the hand free adapter equipment which can perform a hand free message, without equipping with a portable telephone and having a portable telephone about hand free adapter equipment.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

PRIOR ART

[Description of the Prior Art] In recent years, the portable telephone which can be carried is spreading remarkably with progress of the technique of the miniaturization of a circuit or low-power-izing. Moreover, in order to use a portable telephone in in the car, he is trying to offer the safe environment at the time of car transit by equipping hand free adapter equipment with a portable telephone. When a portable telephone has a call, conventional hand free adapter equipment has the advantage that safe arrival-of-the-mail actuation can be performed, even if it can receive a message by operating the receiver switch connected to hand free adapter equipment, and it can talk over the telephone further using the microphone and loudspeaker which are connected to hand free adapter equipment, consequently a car is running.
[0003] Moreover, conventional hand-free adapter equipment reads the telephone number beforehand registered into the portable telephone one by one to hand-free adapter equipment, and make the internal memory in equipment memorize it, and after it chooses the one telephone number of the phase hand who operates the manual operation button prepared in hand-free adapter equipment, and corresponds out of two or more telephone numbers at the time of dispatch, it pushes a message carbon button, sends it to the telephone number concerned, and he was trying to talk over the telephone. Furthermore, since transmission speed was restricted to 600bps when reading the telephone number registered beforehand from a portable telephone one by one and making the internal memory in hand free adapter equipment memorize, if it was in conventional hand free adapter equipment, generally the time amount for about 30 seconds was needed, and great read-out time amount was needed, so that the registration number of cases by the side of a portable telephone was still larger.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

EFFECT OF THE INVENTION

[Effect of the Invention] According to this invention according to claim 1, a phase hand's telephone number beforehand registered into the portable telephone is read one by one, and a phase hand's read telephone number is memorized one by one. Here, since read-out of the telephone number from a portable telephone is interrupted when there is arrival or dispatch while having memorized a phase hand's read telephone number one by one, after interrupting read-out of the telephone number from a portable telephone, a hand free message can be enabled.
[0009] Moreover, since he is trying to interrupt read-out of the telephone number from a portable telephone according to this invention according to claim 2 when a terminating signal is inputted from a portable telephone, or when the actuation for starting a message is inputted, a hand free message can be enabled.
[0010] Furthermore, since he is trying to interrupt read-out of the telephone number from a portable telephone according to this invention according to claim 3 when a dispatch signal is inputted from a portable telephone, a hand free message can be enabled.
[0011] Consequently, even if it does not wait for termination of read-out actuation, dispatch or arrival of a telephone can be performed, and it can prevent that the arrival of the mail and submission operation from a phase hand telephone become impossible over the time amount for 30 seconds or more like before. For this reason, since it can respond also to the message in emergency, it can contribute to improvement in the usability ability of hand free adapter equipment.
[0012]
[Embodiment of the Invention] Hereafter, the gestalt of operation of this invention is explained with reference to a drawing. Drawing 1 is drawing showing the whole hand free adapter equipment configuration concerning the gestalt of 1 operation of this invention. In addition, hand free adapter equipment 1 shall be attached in the center console section of a car. As shown in the whole block diagram shown in drawing 1 (a), the portable telephone 3 is connected to hand free adapter equipment 1 through the signal cable 7. Moreover, as shown in the longitudinal direction sectional view of the equipment shown in drawing 1 (b), a portable telephone 3 is attached and pressed down to the crevice established in hand free adapter equipment 1 top face, and it is fixed to it free [attachment and detachment] with Plates 5a-5d. Furthermore, when it does in this way and a portable telephone 3 is fixed, the hook SW9 prepared in the center of a crevice is pushed, and it is detected that it is in a condition on hook.
[0013] Moreover, he connects with the accessory location (ACC) of an ignition key through the power cord 13, and is trying for hand free adapter equipment 1 to supply a power source to the printed circuit board in which it prepared for the interior and electronic parts were carried from a power cord 13. Moreover, the signal cable 7, the actuation SW section 11, the loudspeaker 15, and the microphone 17 grade are connected to the internal printed circuit board. A loudspeaker 15 shall share the front loudspeaker for audios attached in the door. Moreover, the microphone 17 shall be attached in the front right pillar section. Furthermore, you may make it attach the actuation SW section 11 in a steering wheel free [rotation].
[0014] Next, drawing 2 is drawing showing the block configuration of the hand free adapter equipment concerning the gestalt of 1 operation of this invention. In this drawing, hand free

adapter equipment 1 and a portable telephone 3 are connected through the signal cable 7 which connotes two or more signal lines. A control section 21 has CPU, ROM, RAM, etc. inside, and controls the whole equipment according to a control program or control data. In addition, a control section 21 suspends control of the whole equipment, when a portable telephone 3 is in in its hands [of an operator] when an off-hook condition has hook SW9 namely. Moreover, a portable telephone 3 offers the function as a portable telephone according to actuation of only a manual operation button at this time. Moreover, a control section 21 inputs the actuation information outputted from the actuation SW section 11 shown in drawing 1 (a).

[0015] The serial I/F section 23 exchanges various signals between a control section 21 and a portable telephone 3. In addition, the transmission speed in serial communication is restricted to 600bps. A reset circuit 25 generates a reset signal using the transient phenomenon at the time of power-source ON, and resets a control section 21. An oscillator circuit 27 oscillates a stable clock signal, and supplies it to a control section 21. The speech synthesis section 29 has the voice ROM which records the voice data corresponding to two or more alphabetic characters inside, reads voice data from Voice ROM according to the voice data number given from a control section 21, performs D/A conversion, compounds a speech synthesis signal, and outputs a speech synthesis signal from a loudspeaker 15 via amplifier 35 and Volume VR. An oscillator circuit 31 oscillates a stable clock signal, and supplies it to the speech synthesis section 29.

[0016] The echo cancellation section 33 is for decreasing the echo signal generated when it is reflected by each part in the car and a telephone partner's voice outputted from a loudspeaker 15 becomes a sound signal with a microphone 17 again, and is performing echo cancellation processing of common knowledge which negates a receiving signal component out of a sending signal. After amplifier 35 switches the input signal outputted from a portable telephone 3 through the echo cancellation section 33, or the speech synthesis signal outputted from the speech synthesis section 29 according to the change-over signal outputted from a control section 21, it amplifies one of signals on predetermined voice level, adjusts an output level in Volume VR, and outputs it from a loudspeaker 15. Amplifier 37 amplifies the sound signal inputted through a microphone 17 on predetermined voice level, and outputs it to a portable telephone 3 as a sending signal through the echo cancellation section 33. When it connects with the accessory location of an ignition key through the power cord 13, an operator boards as mentioned above and an ignition key is set up after an accessory location, a power circuit 39 stabilizes the power source supplied from a dc-battery, drops a predetermined electrical potential difference, and is supplied to each part in equipment.

[0017] Next, actuation of the hand free adapter equipment 1 applied to the gestalt of 1 operation of this invention with reference to the flow chart shown in drawing 3 is explained. In addition, this flow chart is memorized inside [ROM] a control section 21, and is processed one by one by the control section 21. As an operator gets into [a car] and it is now shown in drawing 1 (b), a portable telephone 3 shall be attached and fixed to the crevice of hand free adapter equipment 1. Next, suppose that the portable telephone 3 was connected to the signal cable 7. By pushing hook SW9, since it is in a condition on hook, a portable telephone 3 is controllable by this condition also from a control section 21.

[0018] Next, suppose that the operator set up the ignition key after the accessory location. In this case, supply of a power source is started from a power circuit 39 by each part in equipment, only a short period of time is given to a control section 21, and, as for a control section 21, a reset circuit 25 to a reset signal starts actuation. First, at step S10, since the control section 21 read the condition of hook SW9 and detected that it was in a condition on hook, it resets a portable telephone 3. That is, a control section 21 gives a reset code to the serial I/F section 23, outputs a reset code on the actuation signal 1 and 2 from the serial I/F section 23, and resets a portable telephone 3.

[0019] Next, a control section 21 goes up between portable telephones 3 through the serial I/F section 23, and it gets down, a serial signal is exchanged and it judges whether they are a serial signal and the model to which current and the portable telephone 3 connected suit hand free adapter equipment 1. In addition, since decision of being the model to which a portable telephone 3 suits hand free adapter equipment 1 is a well-known control procedure, the explanation is

omitted. Moreover, in the gestalt of this operation, it shall be the model to which a portable telephone 3 suits hand free adapter equipment 1. Next, a control section 21 sets up m= 0 as initial value of the algebra m for the loop-formation processing used for memory read-out processing. In addition, Algebra m is the natural number processed so that it may increase corresponding to an abbreviated number.

[0020] Next, at step S20, it judges whether submission operation is performed by current and the operator. That is, when the message carbon button showing initiation of the message which it had on the portable telephone 3 is operated directly, since it gets down, a dispatch signal is added to a serial signal and it is inputted into the serial I/F section 23, a control section 21 can judge [to which it is outputted from a portable telephone 3] whether the dispatch signal was outputted from the portable telephone 3. When submission operation is performed, while progressing to step S60, when there is no submission operation **********, it progresses to step S30.

[0021] Next, at step S30, a control section 21 judges whether the terminating signal was outputted from the portable telephone 3. That is, since it gets down, a terminating signal is added to a serial signal and it is inputted into the serial I/F section 23, a control section 21 can judge [to which it is outputted from a portable telephone 3] whether the terminating signal was outputted from the portable telephone 3. When a terminating signal is outputted, while progressing to step S60, when the terminating signal is not outputted, it progresses to step S40.

[0022] Next, at step S40, the one telephone number of the phase hand corresponding to the abbreviated number beforehand registered into the portable telephone 3 is read as memory read-out processing, and an abbreviated number is added and memorized inside [RAM] a control section 21. In detail, a control section 21 sets abbreviated number code ='00' as the serial I/F section 23 as an abbreviated number code corresponding to the abbreviated number of No. 0. From the serial I/F section 23, abbreviated number code'00' is added to an uphill serial signal, and it outputs to a portable telephone 3.

[0023] The portable telephone 3 which received this reads the telephone number of the phase hand corresponding to this abbreviated number code from an internal memory, next gets down, adds this telephone number to a serial signal, and outputs it to the serial I/F section 23. Next, a control section 21 memorizes the telephone number inputted into the serial I/F section 23 to Interior RAM. Here, a control section 21 updates the algebra m for loop-formation processing with m=m +1, and sets it up.

[0024] Next, at step S50, a control section 21 judges whether the memory read-out processing from a portable telephone 3 was completed. That is, it judges whether the algebra m for loop-formation processing became m=N +1 to the number of registration N. In addition, a control section 21 shall read this number of registration N from a portable telephone 3 beforehand. Here, when the memory read-out processing from a portable telephone 3 is completed, it progresses to step S60. On the other hand, when the memory read-out processing from a portable telephone 3 is not completed, it progresses to step S20.

[0025] Next, at step S60, the message and the so-called usual hand free message using hand free adapter equipment 1 are performed. As a hand free message, since there are a message in the time of arrival of the mail and a message in the time of dispatch, it explains below. The message procedure in the time of dispatch is explained [1st] as processing after branching from step S20. First, since the dispatch signal was outputted from the portable telephone 3, a control section 21 interrupts memory read-out processing. Next, a change-over signal is outputted to amplifier 35, and the signal from the echo cancellation section 33 is made to output to a loudspeaker 15. In this way, an echo sound decreases in the echo cancellation section 33, and the input signal outputted from a portable telephone 3 is outputted from a loudspeaker 15 via amplifier 35 and Volume VR. Since a phase hand's telephone number is specified from the manual operation button on a portable telephone 3 and submission operation has already been performed by the operator, the call sound outputted from a communication network is outputted to a loudspeaker 15. Here, when a phase hand's operator calls, you have noticed the sound and it appears in a telephone, the response which a phase hand's operator utters is outputted from a loudspeaker 15.

[0026] When a message is completed, after the termination carbon button showing ONFUKKU on a portable telephone 3 is pushed, a communication network is opened wide and it progresses to step S70. In addition, since a terminate signal is added to the going-down serial signal outputted from a portable telephone 3 in this case and it is inputted into the serial I/F section 23, a control section 21 outputs a change-over signal to amplifier 35, and the signal from the speech synthesis section 29 is outputted from a loudspeaker 15. Moreover, since the control section 21 has not given the voice number to the speech synthesis section 29, the signal from the speech synthesis section 29 is a non-signal state, and, needless to say, is in the condition that nothing is outputted, from a loudspeaker 15.
[0027] In addition, since memory read-out processing was interrupted for above-mentioned explanation of operation on the way, the case where the manual operation button on a portable telephone 3 was used was explained, but since the telephone number registered into the portable telephone 3 is memorized in the interior RAM in a control section 21 when the memory read-out processing from a portable telephone 3 is completed, submission operation can be performed as a well-known hand free function using the actuation SW section 11.
[0028] Next, the message procedure in the time of arrival of the mail is explained [2nd] as processing after branching from step S30. First, since the terminating signal was outputted from the portable telephone 3, a control section 21 interrupts memory read-out processing. Next, the call sound which outputs a change-over signal to amplifier 35, and is outputted through the echo cancellation section 33 from a portable telephone 3 is made to output to a loudspeaker 15. Next, the message carbon button on a portable telephone 3 is pushed, an echo sound decreases in the echo cancellation section 33, and the input signal outputted from a portable telephone 3 is outputted by the operator from a loudspeaker 15 via amplifier 35 and Volume VR.
[0029] When a message is completed, after the termination carbon button showing ONFUKKU on a portable telephone 3 is pushed, a communication network is opened wide and it progresses to step S70. In addition, although the explanation of operation at the time of the arrival in the above-mentioned step S60 explained the actuation at the time of using the message carbon button on a portable telephone 3, arrival-of-the-mail actuation can be performed using the actuation SW section 11 also in the middle of the memory read-out processing from a portable telephone 3. In detail, a control section 21 will interrupt memory read-out processing, if a terminating signal is outputted through the serial I/F section 23 from a portable telephone 3. Next, the call sound which outputs a change-over signal to amplifier 35, and is outputted through the echo cancellation section 33 from a portable telephone 3 is made to output to a loudspeaker 15. When answering, the tele key of the actuation SW section 11 is pressed, an echo sound decreases in the echo cancellation section 33, the sound signal outputted from a portable telephone 3 is outputted by the operator from a loudspeaker 15 via amplifier 35 and Volume VR, and a message is started. Moreover, when a hand free message is completed, the tele key of the actuation SW section 11 is again pressed by the operator, and the control section 21 which detected this outputs a terminate signal to a portable telephone 3 through the serial I/F section 23 by him.
[0030] Next, at step S60, a control section 21 judges whether the memory read-out processing from a portable telephone 3 was completed. That is, it judges whether the algebra m for loop-formation processing became m=N +1 to the number of registration N. Here, when the memory read-out processing from a portable telephone 3 is completed, it progresses to step S60. On the other hand, when the memory read-out processing from a portable telephone 3 is not completed, it progresses to step S20. Above, explanation of the flow chart shown in drawing 3 is ended.
[0031] Thus, a phase hand's telephone number beforehand registered into the portable telephone 3 is read through the serial I/F section 23 one by one, and a phase hand's read telephone number is memorized to Interior RAM one by one. Here, since read-out of the telephone number from a portable telephone 3 is interrupted by the control section 21 when a portable telephone 3 has arrival or dispatch while having memorized a phase hand's read telephone number to Interior RAM one by one, after interrupting read-out of the telephone number from a portable telephone 3, a hand free message can be enabled.
[0032] Moreover, since he is trying to interrupt read-out of the telephone number from a

portable telephone 3 by the control section 21 when a terminating signal is inputted through the serial I/F section 23 from a portable telephone 3, or when the actuation for starting a message from the actuation SW section 11 is inputted, a hand free message can be enabled. Furthermore, since he is trying to interrupt read-out of the telephone number from a portable telephone 3 by the control section 21 when a dispatch signal is inputted through the serial I/F section 23 from a portable telephone 3, a hand free message can be enabled.

[0033] Consequently, even if it does not wait for termination of the memory read-out processing from a portable telephone 3, dispatch or arrival of a telephone can be performed, and it can prevent that the arrival of the mail and submission operation from a phase hand telephone become impossible over the time amount for 30 seconds or more like before. For this reason, since it can respond also to the message in emergency, it can contribute to improvement in the usability ability of hand free adapter equipment. Moreover, a message can be continued, without having a portable telephone 3 in its hands, even if it starts a car after submission operation or reception actuation since a hand free message can be enabled by the submission operation and reception actuation using a portable telephone 3.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, if it was in conventional hand free adapter equipment, since dispatch or arrival of a telephone was unreceivable in the middle of read-out actuation, it could not but wait for termination of this read-out actuation, and dispatch or arrival of a telephone had to be performed. For this reason, there was a problem that the arrival of the mail and submission operation from a phase hand telephone became impossible about 30 seconds at least. This invention was made in view of the above, and even as it reads and memorizes a phase hand's telephone number beforehand registered into the portable telephone as the purpose, it is to offer the hand free adapter equipment which can enable a hand free message.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] In the hand free adapter equipment which enables a hand free message, without equipping with a portable telephone and having a portable telephone in order that invention according to claim 1 may solve the above-mentioned technical problem The telephone number read-out means which reads a phase hand's telephone number beforehand registered into said portable telephone one by one, A telephone number storage means to memorize a phase hand's read telephone number one by one, When there is arrival or dispatch while having memorized a phase hand's read telephone number one by one for this telephone number storage means Let it be a summary to enable said hand free message after having a read-out interruption means to interrupt read-out of the telephone number from said portable telephone and interrupting read-out of the telephone number from said portable telephone.
[0006] A signal input means to input a terminating signal from said portable telephone in order that invention according to claim 2 may solve the above-mentioned technical problem, When it has an actuation input means to input the actuation for starting a message and a terminating signal is inputted through this signal input means, Or when the actuation for starting a message through this actuation input means is inputted, let it be a summary to interrupt read-out of the telephone number from said portable telephone with the aforementioned read-out interruption means.
[0007] Invention according to claim 3 makes it a summary to interrupt read-out of the telephone number from said portable telephone with the aforementioned read-out interruption means, when it has a signal input means to input a dispatch signal from said portable telephone and a dispatch signal is inputted through this signal input means, in order to solve the above-mentioned technical problem.

[Translation done.]

* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]
[Drawing 1] They are the whole hand free adapter equipment block diagram (a) concerning the gestalt of 1 operation of this invention, and the longitudinal direction sectional view (b) of equipment.
[Drawing 2] It is drawing showing the block configuration of the hand free adapter equipment concerning the gestalt of 1 operation of this invention.
[Drawing 3] It is a flow chart for explaining actuation of the hand free adapter equipment 1 concerning the gestalt of 1 operation of this invention.
[Description of Notations]
1 Hand Free Adapter Equipment
3 Portable Telephone
11 The Actuation SW Section
21 Control Section
23 Serial I/F Section

[Translation done.]

(19)日本国特許庁（ＪＰ）　(12) **公開特許公報（A）**　(11)特許出願公開番号

特開平10－164204

(43)公開日　平成10年(1998)６月19日

(51)Int.Cl.[6]	識別記号	ＦＩ	
Ｈ０４Ｍ　1/21		Ｈ０４Ｍ　1/21	Ａ
Ｂ６０Ｒ　11/02		Ｂ６０Ｒ　11/02	Ｔ
Ｈ０４Ｍ　1/04		Ｈ０４Ｍ　1/04	Ｚ
// Ｈ０４Ｍ　1/00		1/00	Ｎ

審査請求　未請求　請求項の数３　ＯＬ　（全８頁）

(21)出願番号　特願平8－313825

(22)出願日　平成８年(1996)11月25日

(71)出願人　390001236
ナイルス部品株式会社
東京都大田区大森西５丁目28番６号

(71)出願人　000003997
日産自動車株式会社
神奈川県横浜市神奈川区宝町２番地

(72)発明者　宇野　浩二
東京都大田区大森西５丁目28番６号　ナイルス部品株式会社内

(72)発明者　古賀　修
東京都大田区大森西５丁目28番６号　ナイルス部品株式会社内

(74)代理人　弁理士　三好　秀和　（外８名）

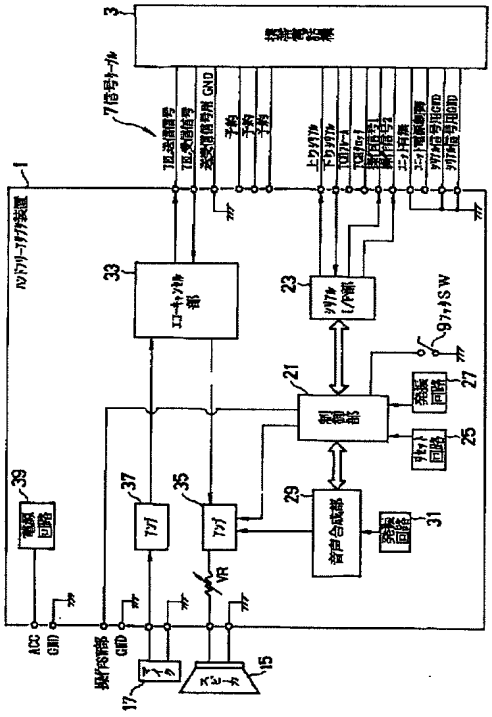
最終頁に続く

(54)【発明の名称】　ハンドフリーアダプタ装置

(57)【要約】

【課題】　携帯電話機に予め登録されている相手先の電話番号を読み出して記憶する途中でも、ハンドフリー通話を可能にすることができるハンドフリーアダプタ装置を提供することにある。

【解決手段】　携帯電話機３に予め登録されている相手先の電話番号を順次にシリアルＩ／Ｆ部２３を介して読み出し、読み出された相手先の電話番号を順次に内部ＲＡＭに記憶する。ここで、読み出された相手先の電話番号を順次に内部ＲＡＭに記憶している途中で携帯電話機３に着信または発信がある場合には、携帯電話機３からの電話番号の読み出しを制御部２１によって中断するので、携帯電話機３からの電話番号の読み出しを中断した後に、ハンドフリー通話を可能にすることができる。



【特許請求の範囲】
【請求項１】　携帯電話機を装着して、携帯電話機を持たずにハンドフリー通話を可能にするハンドフリーアダプタ装置において、
前記携帯電話機に予め登録されている相手先の電話番号を順次に読み出す電話番号読出手段と、
読み出された相手先の電話番号を順次に記憶する電話番号記憶手段と、
読み出された相手先の電話番号を該電話番号記憶手段に順次に記憶している途中で着信または発信がある場合には、前記携帯電話機からの電話番号の読み出しを中断する読出中断手段とを有し、
前記携帯電話機からの電話番号の読み出しを中断した後に、前記ハンドフリー通話を可能にすることを特徴とするハンドフリーアダプタ装置。
【請求項２】　前記携帯電話機から着信信号を入力する信号入力手段と、
通話を開始するための操作を入力する操作入力手段と、を有し、
該信号入力手段を介して着信信号が入力された場合、または、該操作入力手段を介して通話を開始するための操作が入力された場合には、前記読出中断手段によって前記携帯電話機からの電話番号の読み出しを中断することを特徴とする請求項１記載のハンドフリーアダプタ装置。
【請求項３】　前記携帯電話機から発信信号を入力する信号入力手段を有し、
該信号入力手段を介して発信信号が入力された場合には、前記読出中断手段によって前記携帯電話機からの電話番号の読み出しを中断することを特徴とする請求項１記載のハンドフリーアダプタ装置。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、ハンドフリーアダプタ装置に関し、特に、携帯電話機を装着して携帯電話機を持たずにハンドフリー通話を行なうことができるハンドフリーアダプタ装置に関する。
【０００２】
【従来の技術】近年、回路の小型化や低消費電力化の技術の進展に伴い、持ち運びが可能な携帯電話機が著しく普及しつつある。また、携帯電話機を車内において使用するために、ハンドフリーアダプタ装置に携帯電話機を装着することで、車両走行時の安全な環境を提供するようにしている。従来のハンドフリーアダプタ装置は、携帯電話機に呼び出しがあった場合には、ハンドフリーアダプタ装置に接続されている受話スイッチを操作することで着信することができ、さらに、ハンドフリーアダプタ装置に接続されているマイクやスピーカを用いて通話することができ、この結果、車両が走行中であっても安全な着信操作を行なうことができるという利点を有するものである。
【０００３】また、従来のハンドフリーアダプタ装置は、携帯電話機に予め登録されている電話番号をハンドフリーアダプタ装置に順次に読み出して装置内の内部メモリに記憶させ、発信時にはハンドフリーアダプタ装置に設けられた操作ボタンを操作して複数の電話番号の中から該当する相手先の電話番号を１つ選択した後に、通話ボタンを押して当該電話番号に発信して通話するようにしていた。さらに、従来のハンドフリーアダプタ装置にあっては、携帯電話機から予め登録されている電話番号を順次に読み出してハンドフリーアダプタ装置内の内部メモリに記憶させる場合、通信速度が６００ｂｐｓに制限されているので、一般に約３０秒程度の時間を必要とし、さらに、携帯電話機側の登録件数が大きい程、多大な読み出し時間を必要としていた。
【０００４】
【発明が解決しようとする課題】しかしながら、従来のハンドフリーアダプタ装置にあっては、読み出し動作の途中で電話の発信または着信を受け付けることができないため、この読み出し動作の終了を待って電話の発信または着信を行なわざるを得なかった。このため、少なくとも３０秒程度は相手先電話からの着信や発信操作が不能になるといった問題があった。本発明は、上記に鑑みてなされたもので、その目的としては、携帯電話機に予め登録されている相手先の電話番号を読み出して記憶する途中でも、ハンドフリー通話を可能にすることができるハンドフリーアダプタ装置を提供することにある。
【０００５】
【課題を解決するための手段】請求項１記載の発明は、上記課題を解決するため、携帯電話機を装着して、携帯電話機を持たずにハンドフリー通話を可能にするハンドフリーアダプタ装置において、前記携帯電話機に予め登録されている相手先の電話番号を順次に読み出す電話番号読出手段と、読み出された相手先の電話番号を順次に記憶する電話番号記憶手段と、読み出された相手先の電話番号を該電話番号記憶手段に順次に記憶している途中で着信または発信がある場合には、前記携帯電話機からの電話番号の読み出しを中断する読出中断手段とを有し、前記携帯電話機からの電話番号の読み出しを中断した後に、前記ハンドフリー通話を可能にすることを要旨とする。
【０００６】請求項２記載の発明は、上記課題を解決するため、前記携帯電話機から着信信号を入力する信号入力手段と、通話を開始するための操作を入力する操作入力手段と、を有し、該信号入力手段を介して着信信号が入力された場合、または、該操作入力手段を介して通話を開始するための操作が入力された場合には、前記読出中断手段によって前記携帯電話機からの電話番号の読み出しを中断することを要旨とする。
【０００７】請求項３記載の発明は、上記課題を解決す

るため、前記携帯電話機から発信信号を入力する信号入力手段を有し、該信号入力手段を介して発信信号が入力された場合には、前記読出中断手段によって前記携帯電話機からの電話番号の読み出しを中断することを要旨とする。

【０００８】

【発明の効果】請求項１記載の本発明によれば、携帯電話機に予め登録されている相手先の電話番号を順次に読み出し、読み出された相手先の電話番号を順次に記憶する。ここで、読み出された相手先の電話番号を順次に記憶している途中で着信または発信がある場合には、携帯電話機からの電話番号の読み出しを中断するので、携帯電話機からの電話番号の読み出しを中断した後に、ハンドフリー通話を可能にすることができる。

【０００９】また、請求項２記載の本発明によれば、携帯電話機から着信信号が入力された場合、または、通話を開始するための操作が入力された場合には、携帯電話機からの電話番号の読み出しを中断するようにしているので、ハンドフリー通話を可能にすることができる。

【００１０】さらに、請求項３記載の本発明によれば、携帯電話機から発信信号が入力された場合には、携帯電話機からの電話番号の読み出しを中断するようにしているので、ハンドフリー通話を可能にすることができる。

【００１１】この結果、読み出し動作の終了を待たなくても電話の発信または着信を行なうことができ、従来のように３０秒以上の時間に渡って相手先電話からの着信や発信操作が不能になるといったことを防止することができる。このため、緊急時の通話にも対応できるので、ハンドフリーアダプタ装置の使用性能の向上に寄与することができる。

【００１２】

【発明の実施の形態】以下、本発明の実施の形態を図面を参照して説明する。図１は、本発明の一実施の形態に係るハンドフリーアダプタ装置の全体構成を示す図である。なお、ハンドフリーアダプタ装置１は車両のセンターコンソール部に取り付けられているものとする。図１（ａ）に示す全体構成図のように、ハンドフリーアダプタ装置１には、信号ケーブル７を介して携帯電話機３が接続されている。また、図１（ｂ）に示す装置の横方向断面図のように、ハンドフリーアダプタ装置１上面に設けられた凹部に携帯電話機３を取り付けて押さえ板５ａ～５ｄによって着脱自在に固定されている。さらに、このようにして携帯電話機３を固定した場合には、凹部中央に設けられたフックＳＷ９が押されてオンフック状態であることが検出される。

【００１３】また、ハンドフリーアダプタ装置１は、電源コード１３を介してイグニッションキーのアクセサリー位置（ＡＣＣ）に接続されており、内部に備えられ電子部品が搭載されたプリント基板に電源コード１３から電源を供給するようにしている。また、内部のプリント基板には信号ケーブル７や操作ＳＷ部１１やスピーカ１５やマイク１７等が接続されている。スピーカ１５は、例えばドアに取り付けられたオーディオ用フロントスピーカを共用するものとする。また、マイク１７は、フロント右ピラー部に取り付けられているものとする。さらに、操作ＳＷ部１１は、ステアリングホイールに回転自在に取り付けるようにしてもよい。

【００１４】次に、図２は、本発明の一実施の形態に係るハンドフリーアダプタ装置のブロック構成を示す図である。同図において、ハンドフリーアダプタ装置１と携帯電話機３とは複数の信号線を内包する信号ケーブル７を介して接続されている。制御部２１は、ＣＰＵ、ＲＯＭ、ＲＡＭ等を内部に有し、制御プログラムや制御データに従って装置全体を制御する。なお、制御部２１は、フックＳＷ９がオフフック状態にある場合、即ち、携帯電話機３が操作者の手中にあるときには、装置全体の制御を停止するものである。また、このとき、携帯電話機３は操作ボタンのみの操作に従って携帯電話機としての機能を提供するものである。また、制御部２１は、図１（ａ）に示す操作ＳＷ部１１から出力される操作情報を入力する。

【００１５】シリアルＩ／Ｆ部２３は、制御部２１と携帯電話機３との間で各種信号のやりとりを行なう。なお、シリアル通信での通信速度は６００ｂｐｓに制限されている。リセット回路２５は、電源オン時の過渡現象を利用してリセット信号を発生して制御部２１をリセットする。発振回路２７は、安定なクロック信号を発振して制御部２１に供給する。音声合成部２９は、複数の文字に対応する音声データを記録する音声ＲＯＭを内部に有し、制御部２１から与えられる音声データ番号に応じて音声ＲＯＭから音声データを読み出し、Ｄ／Ａ変換を施して音声合成信号を合成し、アンプ３５、ボリュームＶＲを経由してスピーカ１５から音声合成信号を出力する。発振回路３１は、安定なクロック信号を発振して音声合成部２９に供給する。

【００１６】エコーキャンセル部３３は、スピーカ１５から出力される電話相手の音声が車内の各部によって反射され、再びマイク１７によって音声信号となった場合に発生するエコー信号を減少させるためのもので、送信信号中から受信信号成分を打ち消すような周知のエコーキャンセル処理を行なっている。アンプ３５は、エコーキャンセル部３３を介して携帯電話機３から出力される受信信号、または、音声合成部２９から出力される音声合成信号を制御部２１から出力される切換信号に応じて切り換えた後に、いずれかの信号を所定の音声レベルに増幅し、ボリュームＶＲで出力レベルを調整してスピーカ１５から出力する。アンプ３７は、マイク１７を介して入力される音声信号を所定の音声レベルに増幅してエコーキャンセル部３３を介して携帯電話機３に送信信号として出力する。電源回路３９は、上述のように、電源

コード１３を介してイグニッションキーのアクセサリー位置に接続されており、運転者が搭乗してイグニッションキーをアクセサリー位置以降に設定した場合には、バッテリーから供給される電源を安定化させて所定の電圧に降下させ、装置内の各部に供給するものである。

【００１７】次に、図３に示すフローチャートを参照して本発明の一実施の形態に係るハンドフリーアダプタ装置１の動作を説明する。なお、本フローチャートは、制御部２１の内部ＲＯＭに記憶されて制御部２１によって順次に処理されるものである。いま、運転者が車両に搭乗し、図１（ｂ）に示すように、携帯電話機３がハンドフリーアダプタ装置１の凹部に取り付けて固定されるものとする。次に、信号ケーブル７に携帯電話機３を接続したこととする。この状態では、フックＳＷ９が押されてオンフック状態であるので、携帯電話機３は制御部２１からも制御できるものである。

【００１８】次に、運転者がイグニッションキーをアクセサリー位置以降に設定したこととする。この場合には、電源回路３９から装置内の各部に電源の供給が開始され、リセット回路２５からリセット信号が短期間だけ制御部２１に与えられ、制御部２１は動作を開始する。まず、ステップＳ１０では、制御部２１は、フックＳＷ９の状態を読み出してオンフック状態であることを検出したので、携帯電話機３をリセットする。即ち、制御部２１は、リセットコードをシリアルＩ／Ｆ部２３に与え、シリアルＩ／Ｆ部２３から操作信号１，２上にリセットコードを出力して携帯電話機３をリセットする。

【００１９】次に、制御部２１は、シリアルＩ／Ｆ部２３を介して携帯電話機３との間で上りシリアル信号および下りシリアル信号をやりとりし、現在、接続されている携帯電話機３がハンドフリーアダプタ装置１に適合する機種か否かを判断する。なお、携帯電話機３がハンドフリーアダプタ装置１に適合する機種か否かの判断は周知の制御手順であるので、その説明を省略する。また、本実施の形態においては、携帯電話機３がハンドフリーアダプタ装置１に適合する機種であるものとする。次に、制御部２１は、メモリ読み出し処理に用いるループ処理のための代数ｍの初期値として、

ｍ＝０

を設定する。なお、代数ｍは、短縮番号に対応して増大するように処理される自然数である。

【００２０】次に、ステップＳ２０では、現在、操作者によって発信操作が行なわれているか否かを判断する。即ち、携帯電話機３上に備えられた通話の開始を表わす通話ボタンが直接に操作された場合には、携帯電話機３から出力される下りシリアル信号に発信信号が付加されてシリアルＩ／Ｆ部２３に入力されるので、制御部２１は携帯電話機３から発信信号が出力されたか否かを判断できる。発信操作が行なわれた場合には、ステップＳ６０に進む一方、発信操作が行なわていない場合には、ステップＳ３０に進む。

【００２１】次に、ステップＳ３０では、制御部２１は携帯電話機３から着信信号が出力されたか否かを判断する。即ち、携帯電話機３から出力される下りシリアル信号に着信信号が付加されてシリアルＩ／Ｆ部２３に入力されるので、制御部２１は携帯電話機３から着信信号が出力されたか否かを判断できる。着信信号が出力された場合には、ステップＳ６０に進む一方、着信信号が出力されていない場合には、ステップＳ４０に進む。

【００２２】次に、ステップＳ４０では、メモリ読み出し処理として、携帯電話機３に予め登録されている短縮番号に対応する相手先の電話番号を１つ読み出し、制御部２１の内部ＲＡＭに短縮番号を付加して記憶する。詳しくは、制御部２１は、例えば短縮番号０番に対応する短縮番号コードとして、

短縮番号コード＝’００’

をシリアルＩ／Ｆ部２３に設定する。シリアルＩ／Ｆ部２３からは上りシリアル信号に短縮番号コード’００’を付加して携帯電話機３に出力する。

【００２３】これを受けた携帯電話機３は、この短縮番号コードに対応する相手先の電話番号を内部メモリから読み出し、次に、下りシリアル信号にこの電話番号を付加してシリアルＩ／Ｆ部２３に出力する。次に、制御部２１はシリアルＩ／Ｆ部２３に入力された電話番号を内部ＲＡＭに記憶する。ここで、制御部２１は、ループ処理のための代数ｍを、

ｍ＝ｍ＋１

と更新して設定する。

【００２４】次に、ステップＳ５０では、制御部２１は、携帯電話機３からのメモリ読み出し処理が終了したか否かを判断する。即ち、ループ処理のための代数ｍが、登録数Ｎに対して、

ｍ＝Ｎ＋１

になったか否かを判断する。なお、制御部２１はこの登録数Ｎを予め携帯電話機３から読み出しておくものとする。ここで、携帯電話機３からのメモリ読み出し処理が終了した場合にはステップＳ６０に進む。一方、携帯電話機３からのメモリ読み出し処理が終了していない場合にはステップＳ２０に進む。

【００２５】次に、ステップＳ６０では、ハンドフリーアダプタ装置１を利用した通話、所謂、通常のハンドフリー通話が行なわれる。ハンドフリー通話としては、着信時での通話と発信時での通話があるので、以下に説明する。第１に、ステップＳ２０からの分岐以降の処理として、発信時での通話手順を説明する。まず、制御部２１は、携帯電話機３から発信信号が出力されたので、メモリ読み出し処理を中断する。次に、アンプ３５に対して切換信号を出力してエコーキャンセル部３３からの信号をスピーカ１５に出力させる。こうして、携帯電話機３から出力される受信信号はエコーキャンセル部３３に

おいてエコー音が減少され、アンプ３５、ボリュームＶＲを経由してスピーカ１５から出力される。既に、操作者によって携帯電話機３上の操作ボタンから相手先の電話番号を指定して発信操作が行なわれているので、スピーカ１５には通信網から出力される呼び出し音が出力される。ここで、相手先の操作者が呼び出し音に気づいて電話に出たときには、相手先の操作者が発声する応答がスピーカ１５から出力される。

【００２６】通話が終了した場合には、携帯電話機３上のオンフックを表わす終了ボタンが押された後に、通信網が開放され、ステップＳ７０に進む。なお、この場合には、携帯電話機３から出力される下りシリアル信号に終了信号が付加されてシリアルＩ／Ｆ部２３に入力されるので、制御部２１は、アンプ３５に対して切換信号を出力して音声合成部２９からの信号がスピーカ１５から出力される。また、制御部２１は、音声合成部２９に対して音声番号を与えていないので、音声合成部２９からの信号は無信号状態であり、いうまでもなくスピーカ１５からは何も出力されない状態にある。

【００２７】なお、上述の動作説明では、メモリ読み出し処理が途中で中断されたため、携帯電話機３上の操作ボタンを用いた場合について説明したが、携帯電話機３からのメモリ読み出し処理が終了した場合には、制御部２１内の内部ＲＡＭには携帯電話機３に登録されている電話番号が記憶されるので、周知のハンドフリー機能として操作ＳＷ部１１を利用して発信操作を行なうことができる。

【００２８】次に、第２に、ステップＳ３０からの分岐以降の処理として、着信時での通話手順を説明する。まず、制御部２１は、携帯電話機３から着信信号が出力されたので、メモリ読み出し処理を中断する。次に、アンプ３５に対して切換信号を出力し、携帯電話機３からエコーキャンセル部３３を介して出力される呼び出し音をスピーカ１５に出力させる。次に、操作者によって携帯電話機３上の通話ボタンが押され、携帯電話機３から出力される受信信号はエコーキャンセル部３３においてエコー音が減少され、アンプ３５、ボリュームＶＲを経由してスピーカ１５から出力される。

【００２９】通話が終了した場合には、携帯電話機３上のオンフックを表わす終了ボタンが押された後に、通信網が開放され、ステップＳ７０に進む。なお、上述のステップＳ６０における着信時の動作説明では、携帯電話機３上の通話ボタンを用いた場合の動作について説明したが、携帯電話機３からのメモリ読み出し処理の途中でも、操作ＳＷ部１１を利用して着信操作を行なうことができる。詳しくは、制御部２１は、携帯電話機３からシリアルＩ／Ｆ部２３を介して着信信号が出力されると、メモリ読み出し処理を中断する。次に、アンプ３５に対して切換信号を出力し、携帯電話機３からエコーキャンセル部３３を介して出力される呼び出し音をスピーカ１５に出力させる。応答する場合、操作者によって操作ＳＷ部１１のＴＥＬキーが押され、携帯電話機３から出力される音声信号はエコーキャンセル部３３においてエコー音が減少され、アンプ３５、ボリュームＶＲを経由してスピーカ１５から出力され、通話が開始される。また、ハンドフリー通話が終了した場合には、操作者によって操作ＳＷ部１１のＴＥＬキーが再び押され、これを検出した制御部２１はシリアルＩ／Ｆ部２３を介して携帯電話機３に終了信号を出力する。

【００３０】次に、ステップＳ６０では、制御部２１は、携帯電話機３からのメモリ読み出し処理が終了したか否かを判断する。即ち、ループ処理のための代数ｍが、登録数Ｎに対して、

ｍ＝Ｎ＋１

になったか否かを判断する。ここで、携帯電話機３からのメモリ読み出し処理が終了した場合にはステップＳ６０に進む。一方、携帯電話機３からのメモリ読み出し処理が終了していない場合にはステップＳ２０に進む。以上で、図３に示すフローチャートの説明を終了する。

【００３１】このように、携帯電話機３に予め登録されている相手先の電話番号を順次にシリアルＩ／Ｆ部２３を介して読み出し、読み出された相手先の電話番号を順次に内部ＲＡＭに記憶する。ここで、読み出された相手先の電話番号を順次に内部ＲＡＭに記憶している途中で携帯電話機３に着信または発信がある場合には、携帯電話機３からの電話番号の読み出しを制御部２１によって中断するので、携帯電話機３からの電話番号の読み出しを中断した後に、ハンドフリー通話を可能にすることができる。

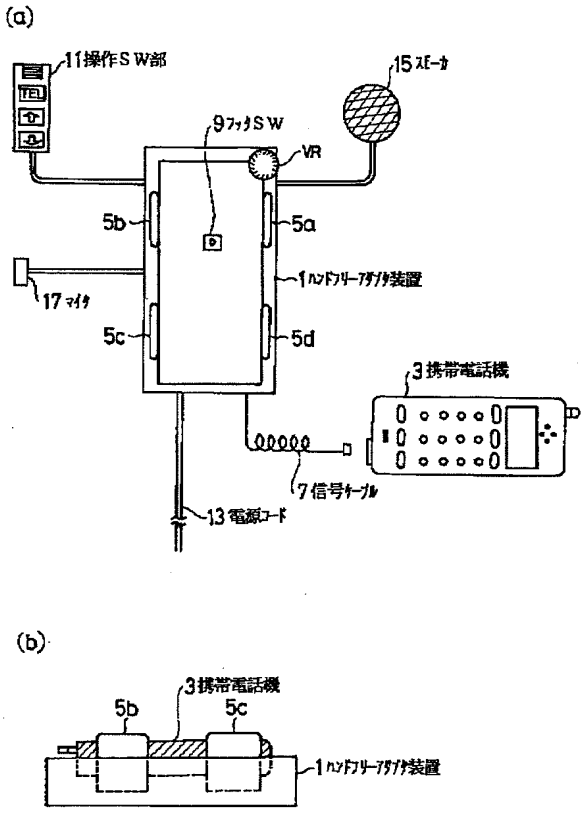
【００３２】また、携帯電話機３からシリアルＩ／Ｆ部２３を介して着信信号が入力された場合、または、操作ＳＷ部１１から通話を開始するための操作が入力された場合には、携帯電話機３からの電話番号の読み出しを制御部２１によって中断するようにしているので、ハンドフリー通話を可能にすることができる。さらに、携帯電話機３からシリアルＩ／Ｆ部２３を介して発信信号が入力された場合には、携帯電話機３からの電話番号の読み出しを制御部２１によって中断するようにしているので、ハンドフリー通話を可能にすることができる。

【００３３】この結果、携帯電話機３からのメモリ読み出し処理の終了を待たなくても電話の発信または着信を行なうことができ、従来のように３０秒以上の時間に渡って相手先電話からの着信や発信操作が不能になるといったことを防止することができる。このため、緊急時の通話にも対応できるので、ハンドフリーアダプタ装置の使用性能の向上に寄与することができる。また、携帯電話機３を用いる発信操作や受信操作によってハンドフリー通話を可能にすることができるため、発信操作や受信操作の後に車両を発進させても、携帯電話機３を手中に持つことなく、通話を継続することができる。

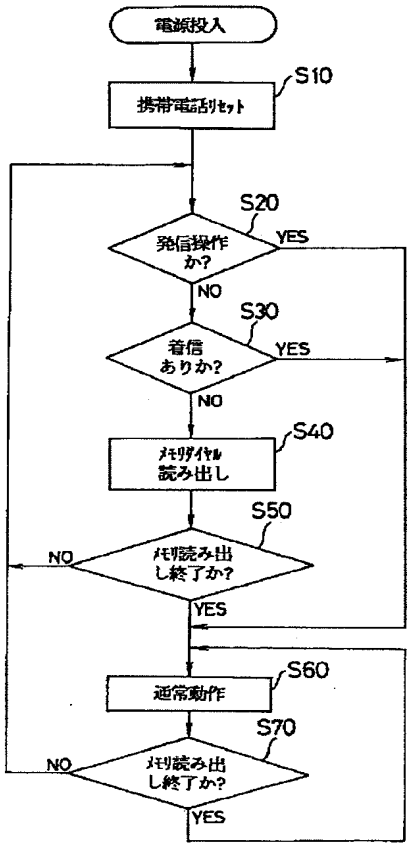
【図面の簡単な説明】
【図１】本発明の一実施の形態に係るハンドフリーアダプタ装置の全体構成図（ａ）と、装置の横方向断面図（ｂ）である。
【図２】本発明の一実施の形態に係るハンドフリーアダプタ装置のブロック構成を示す図である。
【図３】本発明の一実施の形態に係るハンドフリーアダプタ装置１の動作を説明するためのフローチャートである。

【符号の説明】
１　ハンドフリーアダプタ装置
３　携帯電話機
１１　操作ＳＷ部
２１　制御部
２３　シリアルＩ／Ｆ部

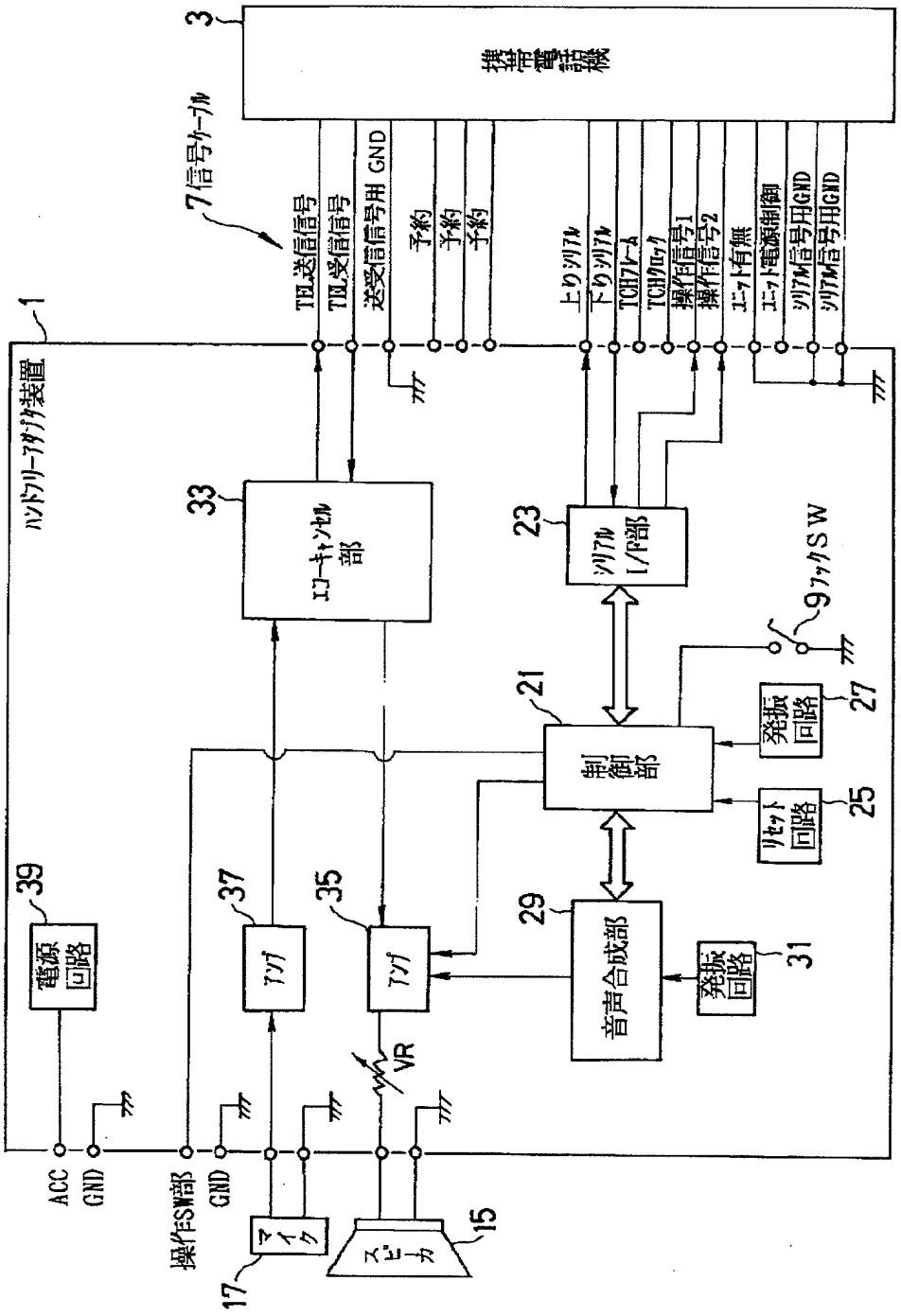
【図１】



【図３】



【図２】



フロントページの続き

(72)発明者　大石　賢治
神奈川県横浜市神奈川区宝町２番地　日産自動車株式会社内

(72)発明者　伊東　哲也
神奈川県横浜市神奈川区宝町２番地　日産自動車株式会社内

(72)発明者　小泉　裕義
神奈川県横浜市神奈川区宝町２番地　日産
自動車株式会社内